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Conference Abstract

Osteogenic, adipogenic and neurogenic differentiation of human adipose-derived mesenchymal stem cells before and after cryopreservation

Marina Hristova‡, Elena Hristova‡, Plamen Todorov‡

‡ Bulgarian Academy of Sciences, Sofia, Bulgaria

Corresponding author: Marina Hristova (mhristova_@abv.bg)

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Abstract

Mesenchymal stem cells (MSCs) represent a promising tool for the regeneration of damaged tissues in cell therapy. They are characterized as undifferentiated progenitors, which have the ability for self-renewal and multilineage differentiation potential. The development of effective protocols for long-term storage, with the aim of subsequent clinical usage, is essential for their application as cellular therapeutics. In our experiments, we aimed to investigate fresh and cryopreserved human adipose tissue-derived MSCs (AT-MSCs) and their osteogenic, adipogenic and neurogenic differentiation potential.

The obtained results pointed out that the cells possess spindle-like shape and form characteristic wave-like layers when reaching confluency. The immunophenotypic analysis shows that they express CD73, CD90 and CD105 and lack the hematopoietic lineage markers CD34 and CD45. Both cryopreserved and fresh hAT-MSCs maintain similar ability to specialize towards osteogenic, adipogenic and neural lineage. In conclusion, the present study indicates that the isolated cells are cryotolerant and are able to retain their morphological and immunophenotypical characteristics after freezing, as well as their multilineage differentiation potential.

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Keywords

mesenchtmal stem cells, cryopreservation, differentiation

Presenting author

Marina Hristova

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